

# PATENT SPECIFICATION

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DRAWINGS ATTACHED

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## (54) ROAD VEHICLE ELECTRICAL CONTROL SYSTEMS

(71) We, JOSEPH LUCAS (INDUSTRIES) LIMITED, a British Company, of Great King Street, Birmingham 19, do hereby declare the invention for which we pray that a Patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to road vehicle electrical control systems.

A system according to the invention includes, in combination with a road vehicle, a transmitting aerial, an oscillator supplying power to the transmitting aerial, a switching circuit for controlling current flow in a load on the vehicle, and a receiving aerial coupled to the switching circuit and adapted to operate the switching circuit when the capacitive coupling between the aerials is increased by touching or nearly touching the receiving aerial.

The accompanying drawing is a circuit diagram illustrating one example of the invention.

Referring to the drawing, the arrangement shown is a proximity switch device in a road vehicle. The battery of the vehicle supplies power to positive and negative supply lines 11, 12 between which is connected an oscillator 13 providing power to a transmitting aerial 14 which is in the form of a loop of wire positioned in a suitable place in the interior of the road vehicle. The loop could, for example, be in the roof of the vehicle or in the back of the driver's seat. Preferably, however, the loop is built into the driver's seat belt.

Mounted in any convenient position, for example the dashboard of the vehicle, is a receiving aerial 15 in the form of an electrode, the aerial 15 being connected to the gate of a field effect transistor 16, the gate of which is also connected to the line 11 through a resistor 17. The drain of the transistor 16 is connected to the line 11 and

its source is connected through a resistor 18 to the base of an n-p-n transistor 19, the collector of which is connected to the line 11 through a resistor 21 and the emitter of which is connected to the base of an n-p-n transistor 22. The transistor 22 has its emitter connected to the line 12, and its collector connected through a diode 23 and a self-latching relay 24 to the line 11, the coil of the relay 24 being bridged by a capacitor 25.

The arrangement is such that the coupling between the aerials 14 and 15 is insufficient to cause the transistor 16 to conduct. However, when the driver wishes to operate the load associated with the aerial 15, he places his finger on the aerial 15, which increases the capacitive coupling between the aerials 14 and 15 to a value such that the transistor 16 conducts to provide base current to the transistor 19, which in turn provides base current to the transistor 22. Resultant alternating current flow through the transistor 22 is rectified by the diode 23 and smoothed by the capacitor 25, and operates the self-latching relay 24. The relay 24 can operate any desired circuit, for example the windscreen wiper motor of the vehicle. When the finger is removed from the aerial 15 the transistors cease to conduct, but the circuit remains energised because the relay is self-latching. Next time the aerial 15 is touched, the relay is energised again to stop the windscreen wipers. In some cases it may be desirable that the circuit being controlled only operates while the finger is touching the area 15, and in this case of course the self-latching relay need not be employed.

There are of course other applications of the invention in a road vehicle. By way of example, the aerial 15 could be positioned along the top edge of the window glass of a power operated window, and would then provide a safety switch if an obstruction should be placed in the path of movement

of the window.

If desired, the sensitivity of the system can be adjusted so that it is not necessary actually to touch the electrode constituting the receiving aerial.

5 WHAT WE CLAIM IS:—

1. A road vehicle electrical control system including, in combination with the road vehicle, a transmitting aerial, an  
10 oscillator supplying power to the transmitting aerial, a switching circuit for controlling current flow in a load on the vehicle, and a receiving aerial coupled to the switching circuit and adapted to operate the  
15 switching circuit when the capacitive coupling between the aerials is increased by touching or nearly touching the receiving aerial.

2. A system as claimed in claim 1  
20 wherein the switching circuit includes a transistor and a diode, the arrangement being such that when the capacitive coupling between the aerials is increased by touching or nearly touching the receiving aerial, said  
25 transistor is turned on and the resultant alternating current flowing through the transistor is rectified by the diode to operate

a switch connected in a circuit containing the load.

3. A system as claimed in claim 2 30 wherein said switch is a latching relay.

4. A system as claimed in any one of claims 1 to 3 wherein said load is a wind-screen wiper motor.

5. A system as claimed in any one of claims 1 to 3 wherein said load is the motor of a power operated window, the receiving aerial being positioned along the top edge of the window glass and operating a safety switch to stop the motor from lifting the  
40 window if an obstruction is placed in the path of movement of the window.

6. A system as claimed in any one of claims 1 to 5 in which the transmitting aerial is built into the driver's seat belt. 45

7. A road vehicle electrical control system comprising the combination and arrangement of parts substantially as described with reference to the accompanying drawing. 50

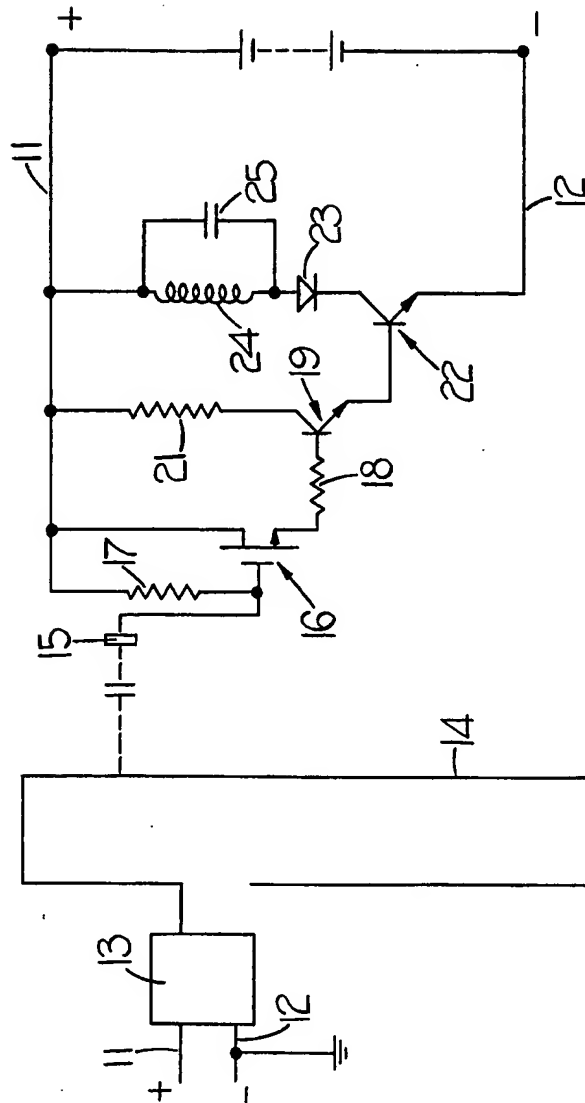
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COMPLETE SPECIFICATION

1 SHEET

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